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EXAMINER

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ART UNIT PAPER NUMBER

2835

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Please find below and/or attached an Office communication concerning this application or proceeding.

Detailed Action

Specification

1. The disclosure is objected to because of the following informalities: Page 13, lines 8 and 13. "partition 42" should be "partition 43."

Appropriate correction is required.

2. The abstract of the disclosure is objected to because it fails to provide a concise statement and should include that which is new in the art to which the invention pertains. The abstract should generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words.

Claim Objections

1. Claim 25 is objected to because of the following informalities: "or augmenting" has been deleted from the independent claim 24 from which this claim depends on. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-16 and 24-33 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-16 and 24-33 are vague and indefinite because of a reference to an industry standard makes the claims inherently vague and indefinite as industry standards are subject to change and/or revision. For example, the PCMCIA standard

Art Unit: 2835

originally had boards of a single size, but currently, the revised standard covers multiple sizes.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Hughes et al. (US 6,011,690).

With respect to Claim 1, Hughes et al. teaches a standardized peripheral apparatus comprising: an integrated circuit (Fig. 1, #16); a case (Fig. 2, #22 and #24) encasing the integrated circuit, the case having a form factor (Col. 1, lines 16-17) and a thermal management arrangement (Fig. 2, #26) to modify the case to provide a suitable thermal environment for the integrated circuit.

5. Claims 1-3, 15-17, 24-26, 28-29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (US 6,031,718).

With respect to Claim 1, Suzuki et al. teaches a standardized peripheral apparatus comprising: an integrated circuit (Fig. 17, #6a); a case (Fig. 17, #2) encasing the integrated circuit, the case having a form factor (Col. 1, lines 16-17) and a thermal management arrangement (Fig. 17, #20a and 20b) to modify the case.

With respect to Claim 2, Suzuki et al. further teaches the thermal management arrangement comprises an outlet vent (Fig. 17, #20b), disposed on a first portion (Fig.

Art Unit: 2835

17, left top) of a first surface (Fig. 17, top) of the case, to facilitate an exhaust of heat generated by the integrated circuit into an ambient.

With respect to Claim 3, Suzuki et al. further teaches an inlet vent (Fig. 17, #20a) disposed on a second portion (Fig. 17, left bottom) of a second surface (Fig. 17, bottom) of the case.

With respect to Claim 15, Suzuki et al. further teaches that the integrated circuit, the case and the thermal management arrangement form a PC Card (Col. 1, lines 15-17).

With respect to Claim 16 and 31, Suzuki et al. further teaches that the PC Card or the electronic circuitry is a selected from one of a data storage device and a communication interface adapter (Col. 1, lines 20-21).

With respect to Claim 17, Suzuki et al. teaches a standardized peripheral apparatus comprising: an integrated circuit (Fig. 17, #6a); a case (Fig. 17, #2) encasing the integrated circuit, the case having an outlet vent (Fig. 17, #20b) disposed on a first portion of a first surface (Fig. 17, #2 left top) of the case to facilitate exhaust of heat generated by the integrated circuit, into ambient; and an inlet vent (Fig. 17, #20a) disposed on a second portion of a second surface (Fig. 17, #2 bottom left) of the case, to facilitate an intake of air from the ambient; a connector (Fig. 17, #7) a flow generating device (Fig. 19, #25) disposed inside the case, to at least facilitate an air flow in a general direction from the inlet vent (Fig. 19, #24a) to the outlet vent (Fig. 19, #24b).

Regarding method claims 24-26, the method steps recited in the claims are inherently necessitated by the device structure as taught by Suzuki et al. as recited above in the rejection to claim 17.

With respect to Claim 28, Suzuki et al. teaches a system comprising: a host device (Col. 1, line 8); a standardized peripheral device including electronic circuitry including an integrated circuit (Fig. 17, #6a); a case (Fig. 17, #2) encasing the electronic circuitry, the case having a form factor (Col. 1, lines 16-17) and a thermal management arrangement (Fig. 17, #20a and #20b) to modify the case to provide a suitable thermal environment for the integrated circuit; and a connector (Fig. 17, #7).

With respect to Claim 29, Suzuki further teaches an outlet vent (Fig. 17, #20a), disposed on a first portion (Fig. 17, #2 top) of the case, to facilitate an exhaust of heat generated by the integrated circuit into an ambient; an inlet vent (Fig. 17, #20b), disposed on a second portion (Fig. 17, #20 bottom) of the case, to facilitate an intake of air from the ambient with air flow (see Fig. 17) over the integrated circuit (Fig. 17, #6a) and a flow generating device (Fig. 19, #25) disposed inside the case using available space, to at least facilitate an air flow.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2835

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 6,031,718) as applied to the above claims, in view of Katooka et al. (US 5,424,915).

With respect to Claim 4, Suzuki teaches the claimed invention, but fails to teach outlet and inlet vents on the same surface. Katooka teaches an outlet vent (Fig. 5, #8), disposed on a first portion (Fig. 5, #1 upper right side) of a first surface (Fig. 5, #1 right side) of the case, to facilitate an exhaust of heat generated by the integrated circuit into an ambient, an inlet vent (Fig. 5, #7) disposed on a second portion (Fig. 5, #1 lower right side) of a second surface (Fig. 5, #1 right side) of the case, to facilitate an intake of air from the ambient, wherein the first and second surfaces are of the same surface (Fig. 5, #1 right side). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Suzuki et al. with that of Katooka et al. to provide a case with the vents on the surface when remaining sides may be external covered by the operating environment.

8. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 6,031,718) in view of Wagner (US 6,459,578).

With respect to Claim 11, Suzuki teaches the claimed invention, but fails to teach a partition and a flow generating device. Wagner teaches at least one partition (Fig. 1, #40 top) disposed inside the case using available space to provide a plurality of air flow chambers (Fig. 1, #20, #18, #19 and #40); and a flow generating device (Fig. 1, #35) disposed inside the case using available space to facilitate an air flow over a portion of the integrated circuit. With respect to Claim 12, Wagner further teaches the flow

Art Unit: 2835

generating device and at least a portion of the integrated circuit are located substantially in (see Fig. 2) a first air flow chamber (Fig. 1, #20, #18 and #19). With respect to Claim 13, Wagner further teaches the first air flow chamber is defined in part by the second portion of the second surface (Fig. 1, upper right side) on which the inlet vent (Fig. 1, #16) is disposed; and the first portion of the first surface (Fig. 1, lower left side) on which the outlet vent (Fig. 1, #17) is disposed defines a second air chamber (Fig. 1, #40).

With respect to Claim 14, Wagner further teaches the first airflow chamber (Fig. 1, #20, #18 and #19) is flow-coupled (see Fig. 1) to the second air flow chamber (Fig. 1, #40).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Suzuki et al. with that of Wagner to provide a partition and a plurality of flow chambers to route an air flow through the apparatus.

9. Claims 5-10 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 6,031,718) as applied to the above claims, in view of Pokharna (US 6,801,430).

With respect to Claim 5, Suzuki teaches the claimed invention, but fails to teach a flow generating device. Pokharna teaches a flow generating device (Fig. 2, #206) disposed inside the case using available space, to at least facilitate an air flow (see Fig. 2) over the integrated circuit in a general direction from the inlet vent to the outlet vent. With respect to Claim 6, Pokharna further teaches the flow generating device is positioned (See Fig. 2) substantially near the inlet vent. With respect to Claims 7 and 8, Pokharna further teaches the jet actuator comprises a selected one of a piezoelectric synthetic jet actuator and an electromagnetic synthetic jet actuator (Fig. 3, #304). It

Art Unit: 2835

would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Suzuki et al. with that of Pokharna a small compact flow generator to provide an air flow to cool the integrated circuit.

With respect to Claim 9, while Pokharna teaches a jet actuator, it fails to disclose a size of the jet actuator except that the actuator is smaller than 5.5 mm (Col. 2, line 47), it would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a jet actuator that is approximately between 2-3 mm high or any size which would allow the apparatus to operate at maximum efficiency.

With respect to Claims 10, while Pokharna et al. teaches a jet actuator, it fails to disclose a input power for the jet actuator, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a jet actuator that operates on input power of approximately between 10 and 50 milliwatts or any range which would allow the apparatus to operate at maximum efficiency.

Regarding method claim 27, the method steps recited in the claims are inherently necessitated by the device structure as taught by Suzuki et al. in view of Pokharna as recited above in the rejection to claim 7.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 6,031,718) as applied to claim 17 above, in view of Katooka et al. (US 5,424,915).

With respect to Claim 18, Suzuki et al. teaches the apparatus of claim 17. It fails to teach that the first and second surfaces are of the same surface. Katooka et al. teaches wherein the first and second surfaces are of the same surface (see Fig. 5). It

Art Unit: 2835

would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Suzuki et al. with that of Katooka et al. locate the inlet and outlet vents to maximize the air flow through the apparatus.

11. Claims 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 6,031,718) in view of Katooka et al. (US 5,424,915) and further in view of Pokharna (US 6,801,430).

With respect to Claim 19, Suzuki et al. in view of Katooka et al. discloses the claimed invention, but do not teach position of the flow generator near the inlet vent or that the flow generator is a jet actuator. Pokharna teaches the flow generating device is positioned substantially near (see Fig. 2) the inlet vent (Fig. 2, #210). With respect to Claim 20, Pokharna further teaches that the flow generating device that includes a synthetic jet actuator (Fig. 3, #304). With respect to Claim 21, Pokharna further teaches that the synthetic jet actuator is a selected from one of a piezoelectric type and an electromagnetic type (Fig. 3, #304). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Suzuki et al. in view of Katooka et al. with that of Pokharna to select a location for the flow generating device to maximize the cooling and to select the type of flow generating device to maximize air flow while minimizing the size, weight, power requirements and noise in providing air flow to cool the integrated circuit.

With respect to Claim 22, while Pokharna teaches a jet actuator, it fails to disclose a size of the jet actuator except that the actuator is smaller than 5.5 mm (Col. 2, line 47), it would have been obvious to one of ordinary skill in the art at the time of the

invention was made to include a jet actuator that is approximately between 2-3 mm high or any size which would allow the apparatus to operate at maximum efficiency.

With respect to Claim 23, while Suzuki et al. teaches wherein the connector is a computer expansion "connector conforming with the standard by PCMCIA...or the like is removably inserted into a slot of an IC card mountable device" (Col. 1, lines 15-18), it fails to disclose that "or the like" includes a 32-bit Cardbus slot. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a connector that meets any connector interface standard including a 32-bit card slot to allow for maximum flexibility for expansion.

12. Claims 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 6,031,718) in view of Pokharna (US 6,801,430).

With respect to Claim 30, Suzuki et al. teaches the claimed invention, but fails to teach that the flow generating device is a selected one of a piezoelectric synthetic jet actuator and an electromagnetic jet actuator. Pokarna teaches wherein the flow generating device is a selected one of a piezoelectric synthetic jet actuator and an electromagnetic jet actuator (Fig. 3, #304). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Suzuki et al. with that of Pokharna to select a location for the flow generating device to maximize the cooling and to select the type of flow generating device to maximize air flow while minimizing the size, weight, power requirements and noise in providing air flow to cool the integrated circuit.

With respect to Claim 32, while Suzuki et al. teaches the host device is an "IC card mountable device such as a personal computer", it fails to specify other uses as a set-top box, a mobile phone, a digital camera, and a personal digital assistant. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have host device to any device including a set-top box, a mobile phone, a digital camera, and a personal digital assistant that needs the capability to increase its functionality by adding modular additional integrated circuits to perform additional functions.

13. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 6,031,718).

With respect to Claim 33, while Suzuki et al. teaches the connector is a computer expansion "connector conforming with the standard by PCMCIA...or the like is removably inserted into a slot of an IC card mountable device" (Col. 1, lines 15-18), it fails to disclose that "or the like" includes a 32-bit Cardbus slot. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a connector that meets any connector interface standard including a 32-bit card slot to allow for maximum flexibility for expansion.

Response to Arguments

14. Regarding claims 1-16 and 24-33, the applicant has amended their claims, then presenting arguments that the amended claims (not the original claims) with a revised limitation are distinguished from the prior art. Arguments regarding claims 1-16 and 24-33 have been considered, but are moot in view of the new ground(s) of rejection.

Regarding claims 17-23, the applicant's arguments, file 2/6/2006, with respect to the rejection(s) of claim(s) 17-23 have been fully considered and are persuasive.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made above.

15. Regarding applicant's arguments regarding the rejection drawn to 35 USC 112. The functional limitation of a form factor meeting a standard is indefinite because the claim states the external dimensions can be any size. A functional limitation when recited in an apparatus claim lacks any patentable weight.

16. Regarding applicant's arguments regarding use of a relative terminology. A claim may be rendered indefinite by reference to an object that is variable. MPEP 2173.05(b). For example, in *Ex parte Brummer*, 12 USPQ2d 1653 (Bd. Pat. App. & Int. 1989), the Board held a claim to a bicycle that recited "said front and rear wheels so spaced as to give a wheelbase that is between 58 percent and 75 percent of the height of the rider that the bicycle was designed for" was indefinite because the relationship of parts was not based on any known standard for sizing a bicycle to a rider, but a rider of unspecified build.

17. Regarding applicant's arguments on claims 1-16 and 24-33. A case having "a form factor including a plurality of external dimensions in compliance with a standard" encompasses all existing and future (industry and proprietary) standards that have any external dimensions. Apparatus claims must be structurally distinguishable from the prior art. MPEP 2114. While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art

Art Unit: 2835

in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).


18. Regarding applicant's arguments regarding motivation to combine references under 35 USC 103, The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly in the prior art or it may be reasoned from knowledge generally available to one ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (fed. Cir. 1988).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on (571) 272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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RJH 

BORIS CHÉRVINSKY
PRIMARY EXAMINER


2/16/16